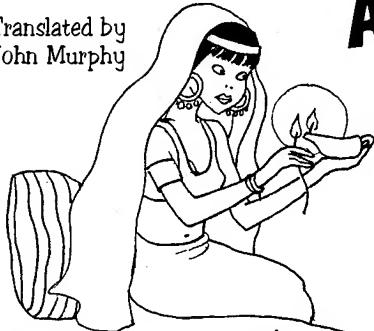


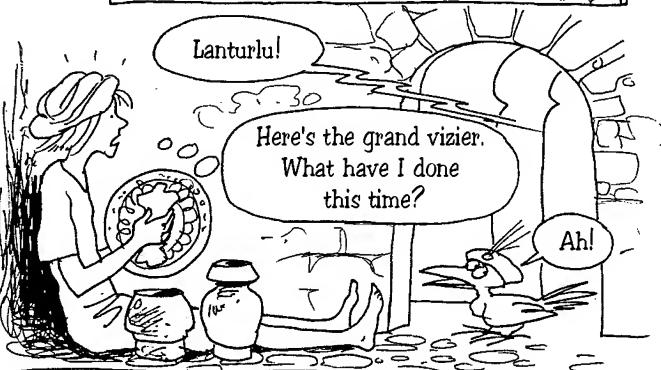
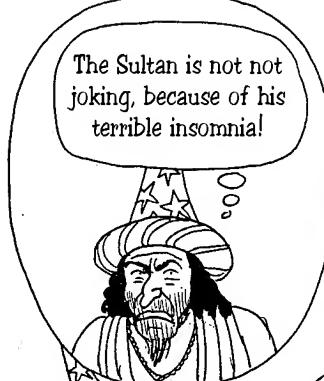
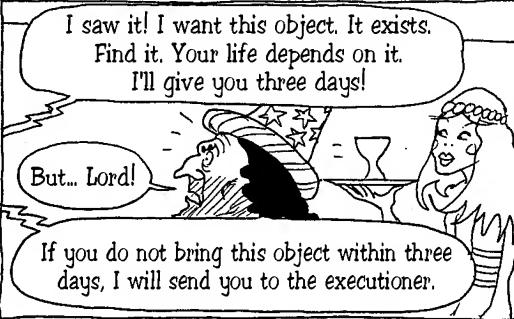
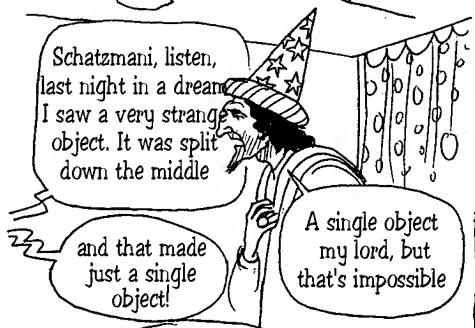
# THE SCIENTIFIC THOUSAND AND ONE NIGHTS 1

Translated by  
John Murphy

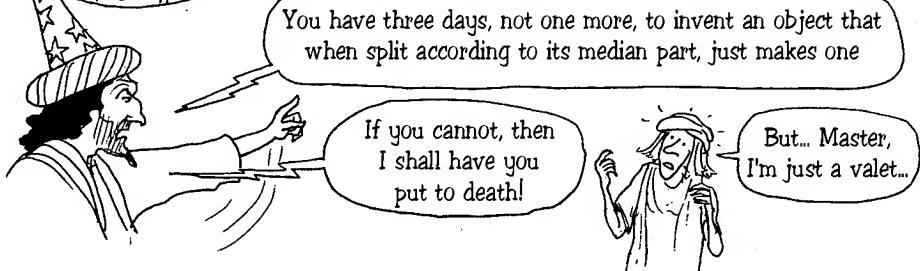
JEAN-PIERRE PETIT



Once upon a time there lived a Sultan in a magnificent palace in a distant part of the Orient. He had everything, gold, women, magnificent horses. But each night he could not sleep because he asked himself all sorts of questions to which he could find no answer. Each night he called for his grand vizier, Schatzmani.



You have three days, not one more, to invent an object that when split according to its median part, just makes one

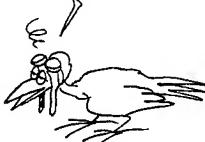




It's obvious that Schatzmani wants me dead. It is impossible to find such an object because it doesn't exist. If I cut through this bracelet according to its median line, I get two cylinders and not just one band.



I've travelled throughout the kingdom and I have seen nothing that could resemble what your master, the vizier Schatzmani, is asking for.



The third, fateful day arrived.



There Alethea, night is falling. Tomorrow, at dawn, Schatzmani will have my head cut off. What can I do between now and then? Hmm, I was polishing the copper, I might as well carry on.



Effectively.



By Allah, this lamp is very dirty, completely oxydised. I'll have to rub hard to get it to shine.

And Anselme Lanturlu rubbed the lamp...

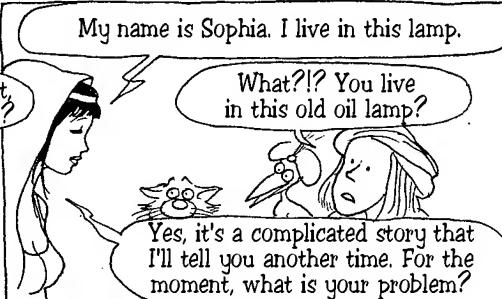


Ah, a bit of air at last...

By the prophet, who are you?!?

My name is Sophia. I live in this lamp.

What?!? You live in this old oil lamp?



Yes, it's a complicated story that I'll tell you another time. For the moment, what is your problem?

Miau!



Schatzmani, my master, told me that he will have my head cut off tomorrow morning if I don't find an object that when split according to its median line will give a single object. Well, I know that that is impossible. So at dawn I'll be handed over to the executioner.

Hmm, it's sometimes risky to say that something is possible or impossible. Let us ask the advice of Professor Zephyr.

Who's Professor Zephyr?

He's still in the lamp. Come out Professor Zephyr.

I don't mind, but chase that cat away first.

It's a female cat, she's very old and you have nothing to fear!

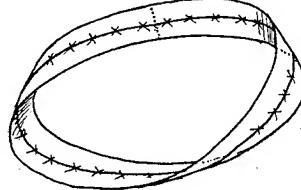
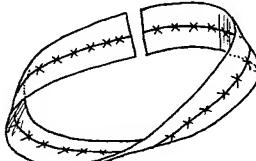
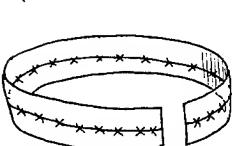
OK...

What the grand vizier is asking for seems impossible. Look, I've split this cylinder according to its median part and...

Hmm, I can see what it is. Let's begin by putting the two parts back together, one on the other.

Professor Zephyr always has good ideas

But...

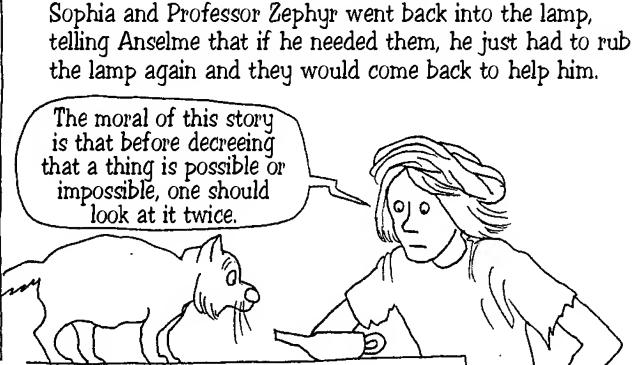
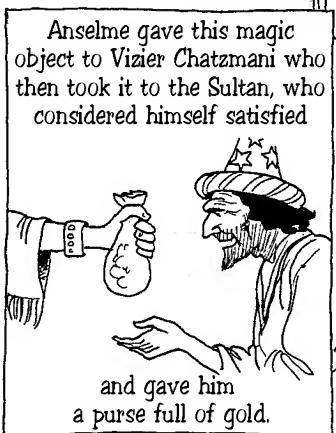
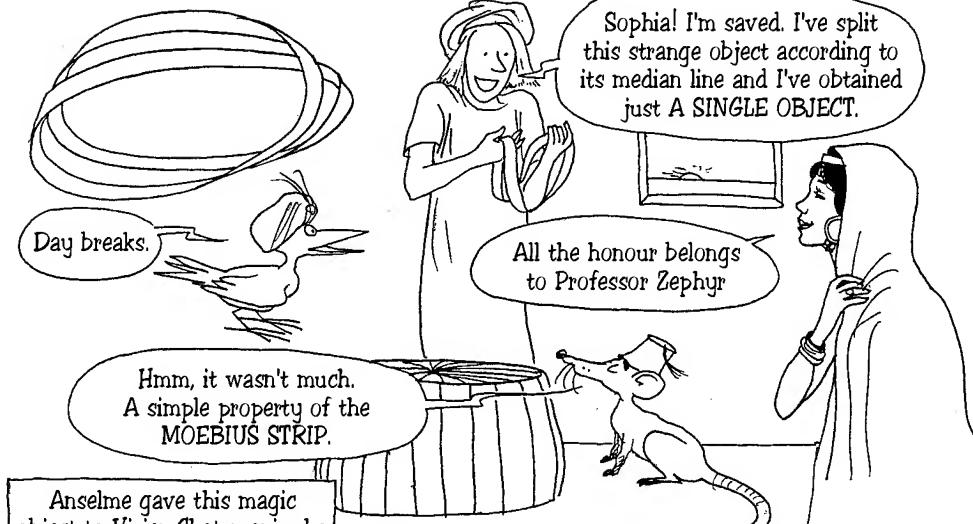


Now we cut the strip. We'll give it a half-turn and stick it back on itself, as shown in the drawings.

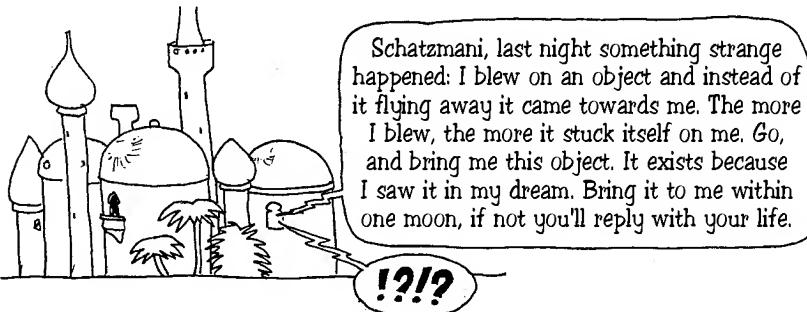
So what? What does that change?

But that changes everything dope. Now remove the stitching and you'll see.





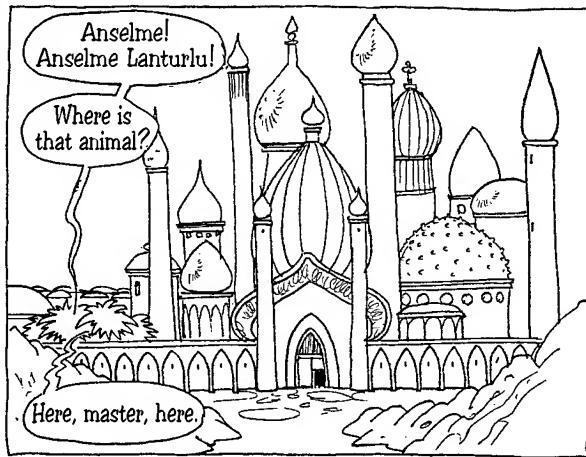
Calm returned under the gold plated domes of the beautiful town of Ispahan. But while Vizier Schatzmani continued to consciously steal from his master and Anselme continued to clean the copper lamps, the old Sultan's nights were once more haunted by strange, piercing dreams.



# THE SCIENTIFIC THOUSAND AND ONE NIGHTS

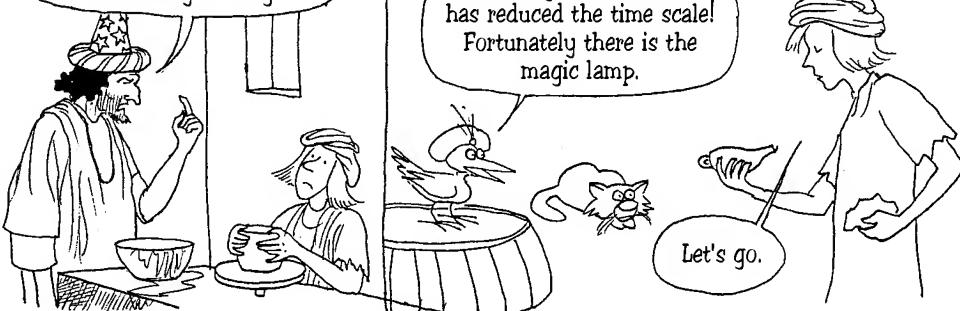


Schatzmani, the grand vizier, is in a very bad mood.



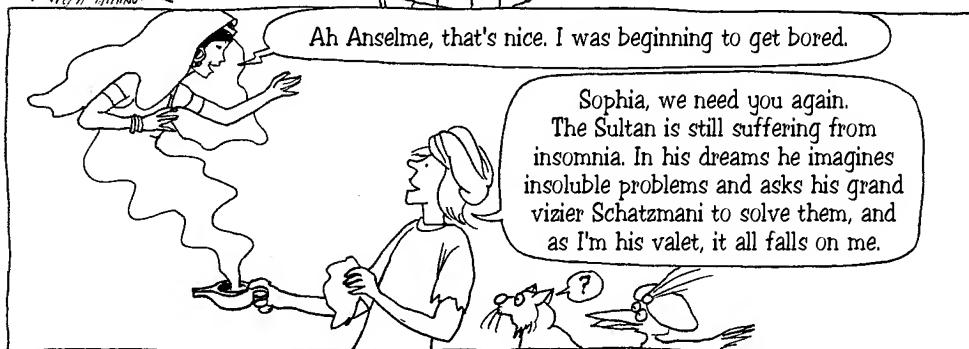
Anselme, within two days you must find an object such that when you blow on it, it comes towards you instead of moving away, if not I'll have you hung.

Two days? The Sultan has reduced the time scale! Fortunately there is the magic lamp.



Ah Anselme, that's nice. I was beginning to get bored.

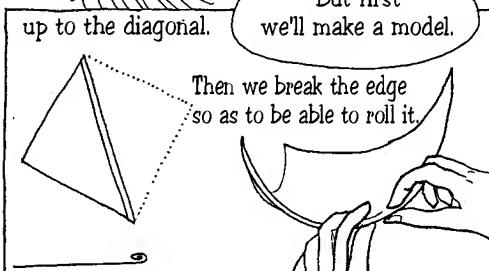
Sophia, we need you again. The Sultan is still suffering from insomnia. In his dreams he imagines insoluble problems and asks his grand vizier Schatzmani to solve them, and as I'm his valet, it all falls on me.



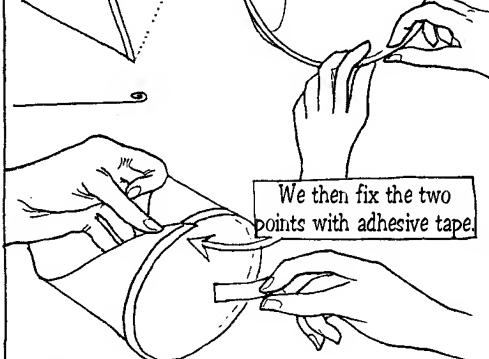


Hmm, this is beyond my competence. We'll have to visit Doctor Aircurrent. For that we'll make a flying carpet. We need a big, square carpet to start with.

We'll begin by rolling the sheet on itself, like this:

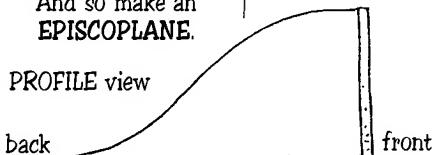


But first we'll make a model.

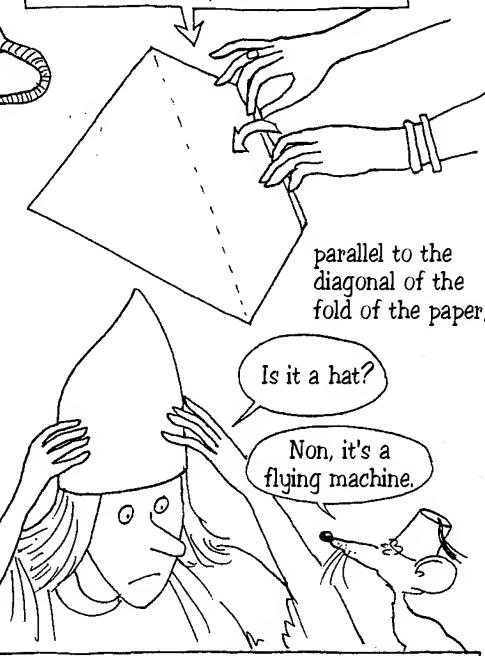
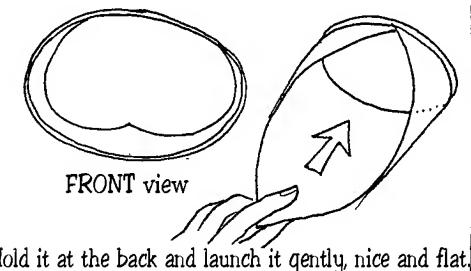


And so make an EPISCOPLANE.

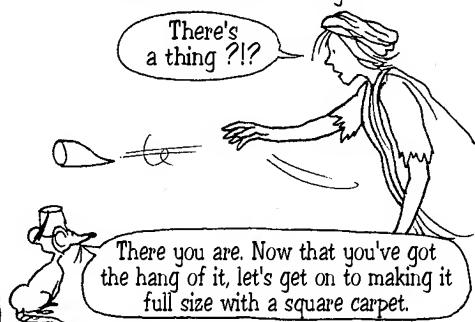
PROFILE view



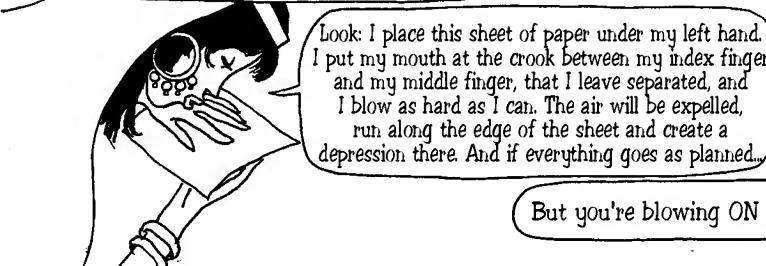
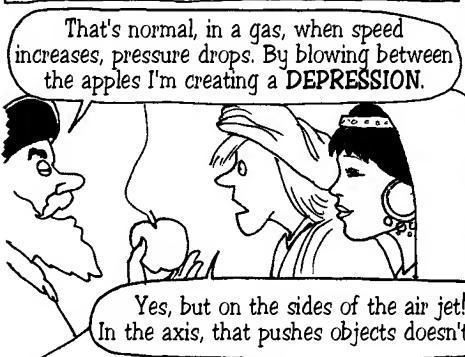
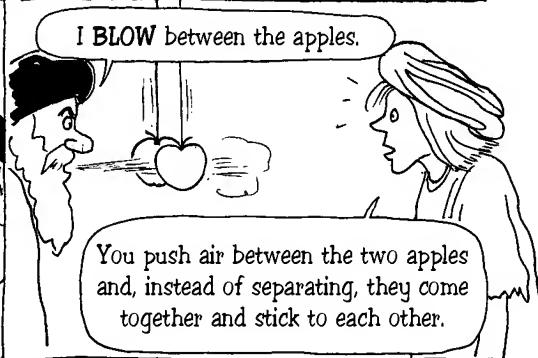
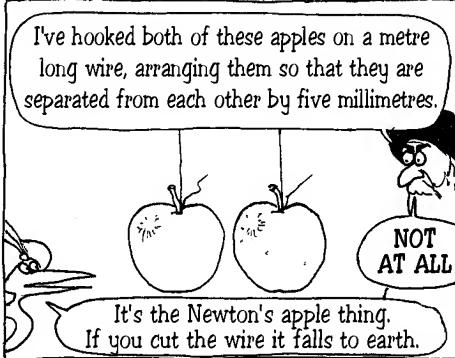
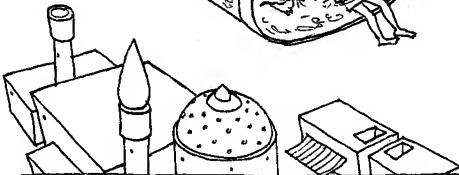
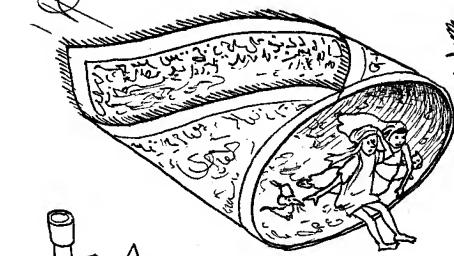
FRONT view



If the EPISCOPLANE is made carefully, it will fly perfectly over a long distance. You mustn't throw it violently but give it just the necessary speed, as if you were placing it on the air that will carry it.



Taking the strange flying carpet conceived by Professor Zephyr, Anselme Lanturlu and Sophia go to visit Doctor Aircurrent.





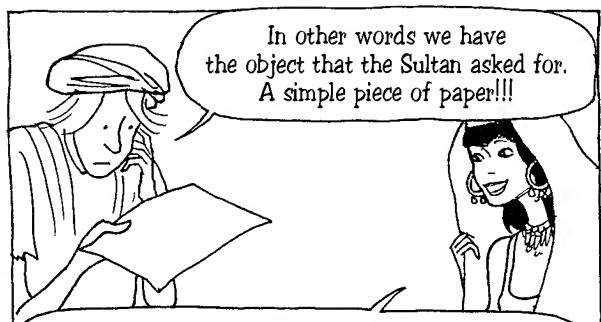
It works?!?

Thin card

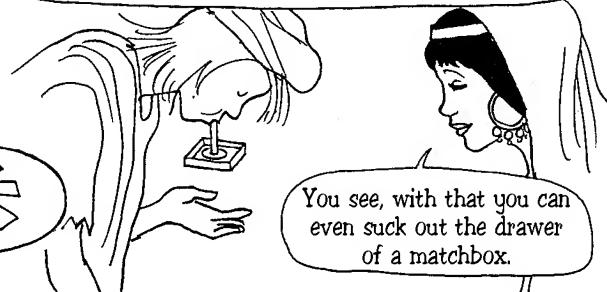
disc

1/1 scale

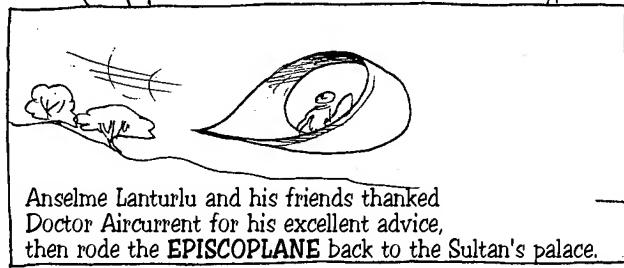
We need to use  
glue or adhesive  
tape to connect a  
cylinder to a disc  
pierced with a  
round hole.



Wait. We'll make something more elaborate for your Sultan. With the paper, if we don't blow hard enough, it won't work and he'd be capable of hanging everyone.



You see, with that you can  
even suck out the drawer  
of a matchbox.



Anselme Lanturlu and his friends thanked Doctor Aircurrent for his excellent advice, then rode the **EPISCOPLANE** back to the Sultan's palace.

### THE ASPIROBLOWER

Sophia and Professor Zephyr returned to the lamp.



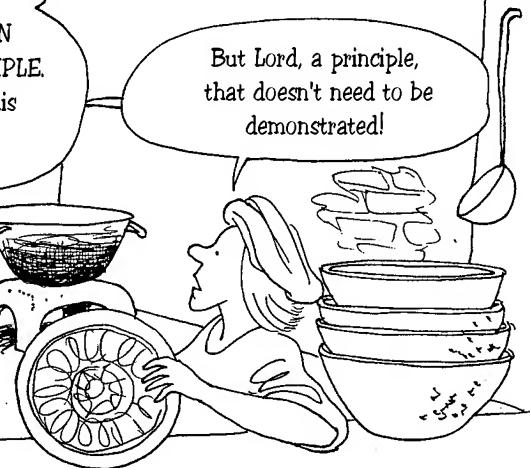
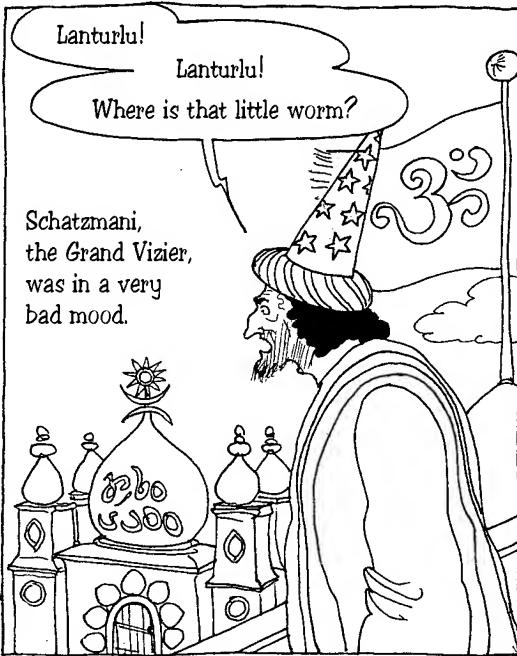
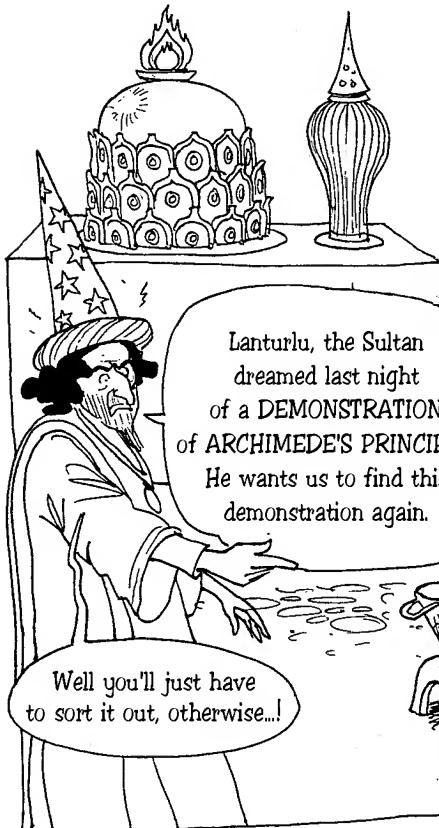
But the Sultan:

Schatzmani!  
I want a demonstration of  
ARCHIMEDE'S PRINCIPLE!

But... master, in principle  
a principle does not need  
to be demonstrated!



# THE SCIENTIFIC THOUSAND AND ONE NIGHTS ③



Demonstrate a principle, pff...



A body immersed wholly or partially in water receives a thrust from the bottom to the top equal to the weight of the water displaced

(around 210 B.C)

This looks complicated.  
We should call Sophia.

Here's the magic lamp.



Here I am Lord.  
How can I be of service?

What is this  
building site? ...

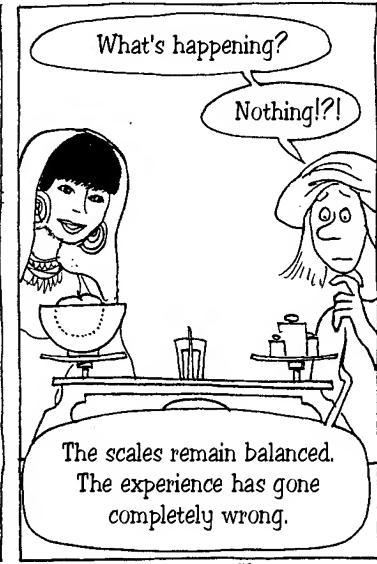
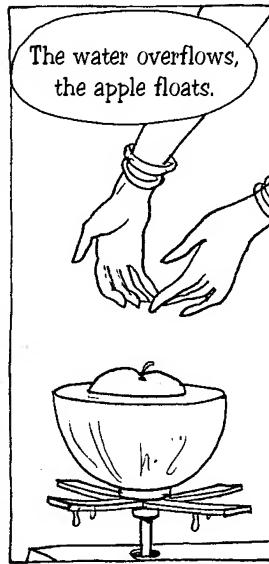
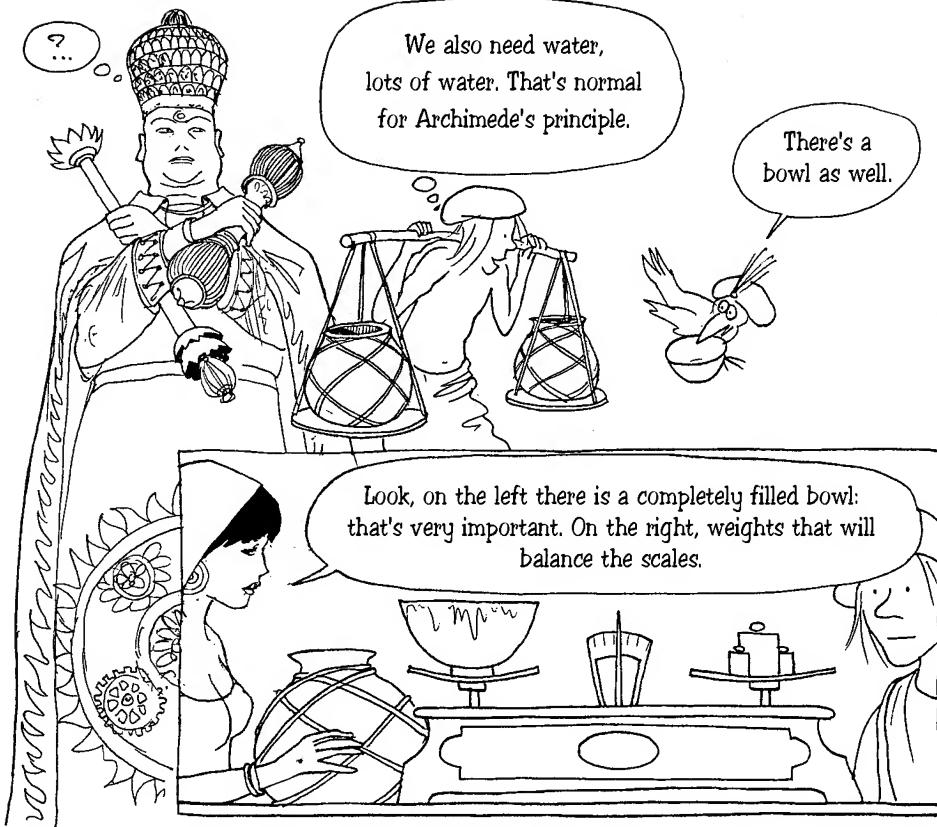
Sophia asked for  
very precise material

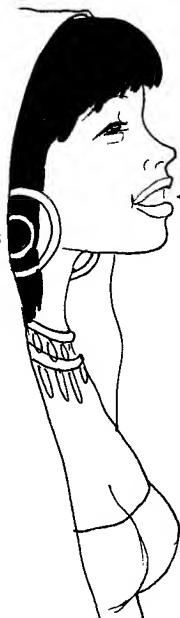
Scales

Weights

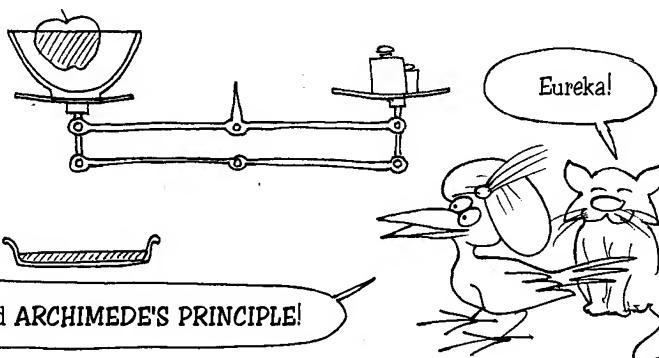
An apple







No, on the contrary, the experiment worked:  
the apple is floating so "Archimede's thrust" balances its weight.  
And what is the value of this thrust? If we believe the scales  
it's the weight of the displaced water, which overflowed  
from the bowl when I put the apple in.



We have demonstrated ARCHIMEDE'S PRINCIPLE!



Schatzmani went to tell the Sultan that his dream  
had been elucidated and in return he was gratified.  
Anselme went back to his cooking pots.

Luckily, the apple was  
less dense than the water.  
If it had been the contrary,  
goodbye the fine demonstration.



Hmmmm

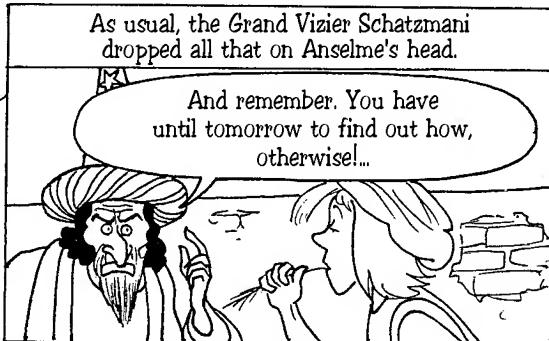


# THE SCIENTIFIC THOUSAND AND ONE NIGHTS



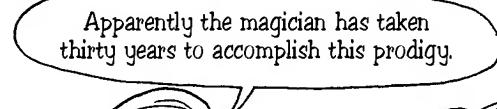
The Sultan has gone completely mad.

He had a visit from a magician who showed him that he could stop his heart. Now he wants me to accomplish the same wonder, if not he promises to have me hanged.



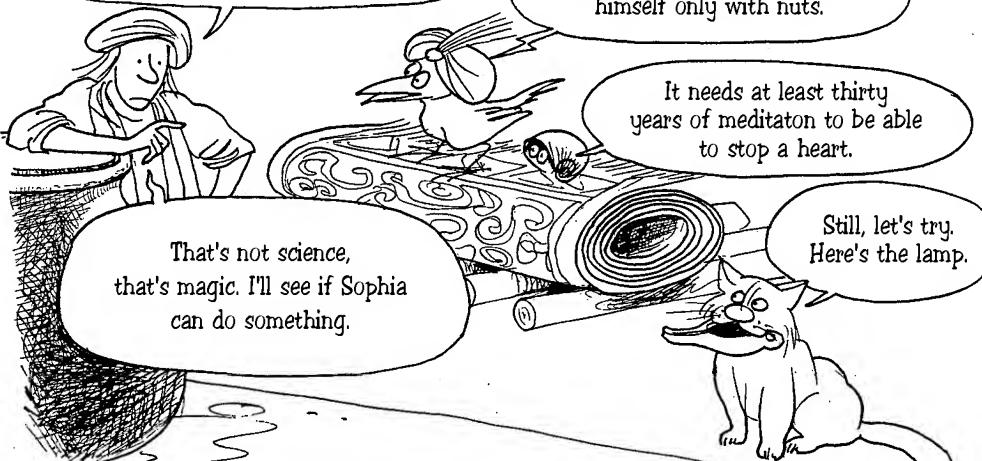
As usual, the Grand Vizier Schatzmani dropped all that on Anselme's head.

And remember. You have until tomorrow to find out how, otherwise!...



Apparently the magician has taken thirty years to accomplish this prodigy.

During that time he nourished himself only with nuts.



That's not science, that's magic. I'll see if Sophia can do something.

It needs at least thirty years of meditation to be able to stop a heart.

Still, let's try. Here's the lamp.

Ah my dears, I heard you from the bottom of my lamp and I admit it made me laugh. Your magician is a clever trickster. How did he show that he had stopped his heart?

Well, he asked that his pulse be taken...

And what connection is there between the pulse and the heart?

How to take a pulse

In theory, blood vessels, an artery that carries blood.

Do you mean that that's how he stops his heart, by stopping blood flow from his heart to his wrist?

But with WHAT?

With THAT

But that's just a walnut!?

Does this nut have pharmaceutical properties?

Nothing to do with it.  
You place the walnut under your armpit, where the artery passes that brings fresh blood to your arm.

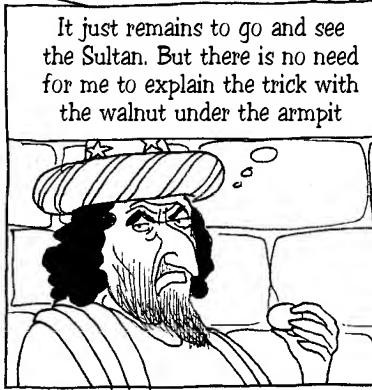
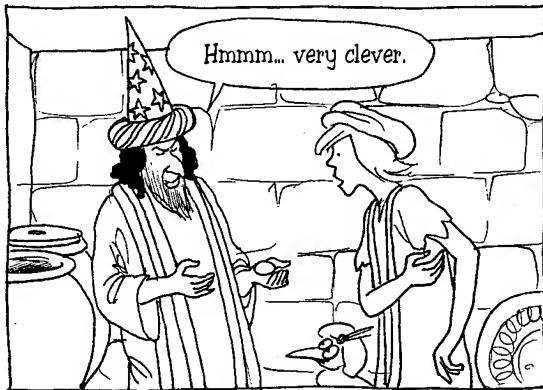
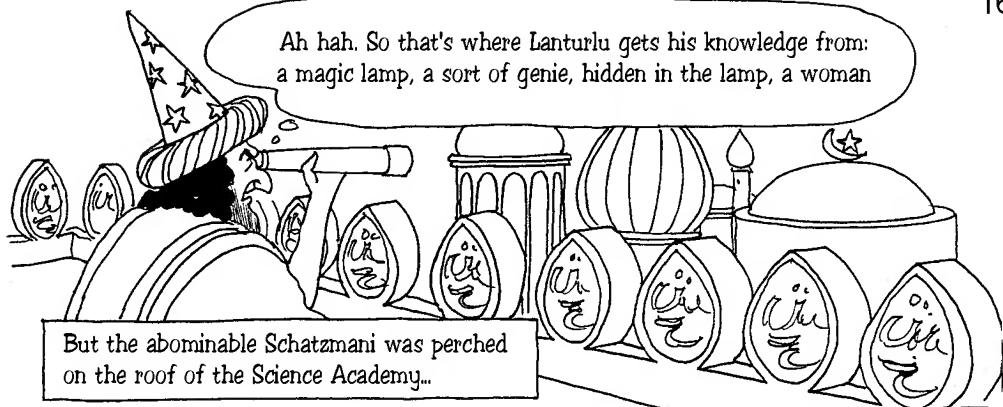
No one notices  
and if I don't I press  
my arm against my  
body, you feel  
a normal pulse.

But if I imperceptibly press the nut  
in my armpit, the artery is compressed.  
Blood no longer passes and you  
can no longer feel my pulse.

My goodness,  
it's true!

When I think that this rascal magician, in tricking our Sultan, received a full purse of gold by making him believe that he had special powers...

Ah hah. So that's where Lanturlu gets his knowledge from: a magic lamp, a sort of genie, hidden in the lamp, a woman

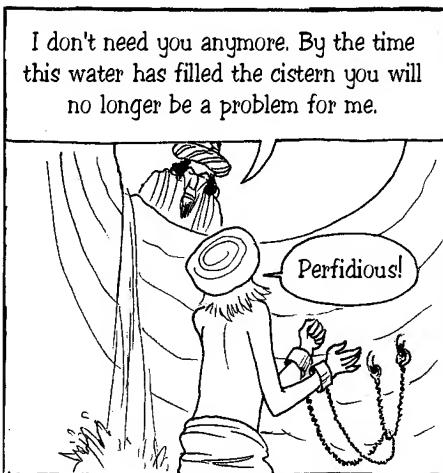


# THE SCIENTIFIC THOUSAND AND ONE NIGHTS

5



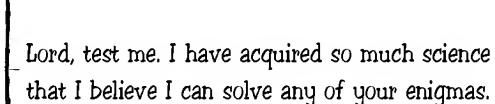
So this is the magic lamp from which Lanturlu gets all his knowledge. I just need to rub it, the genie will come out of the lamp and solve any problem.



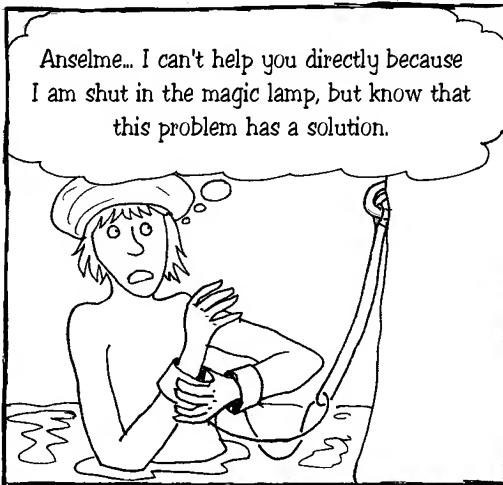
Perfidious!



This chain is too strong! I can't free my wrists. I'm done for!



Well, I shall call you when a new enigma appears in one of my dreams.



Anselme... I can't help you directly because I am shut in the magic lamp, but know that this problem has a solution.

A solution?!? But Sophia!  
It is EVIDENT that this problem  
has no solution and that I'm  
condemned to death.

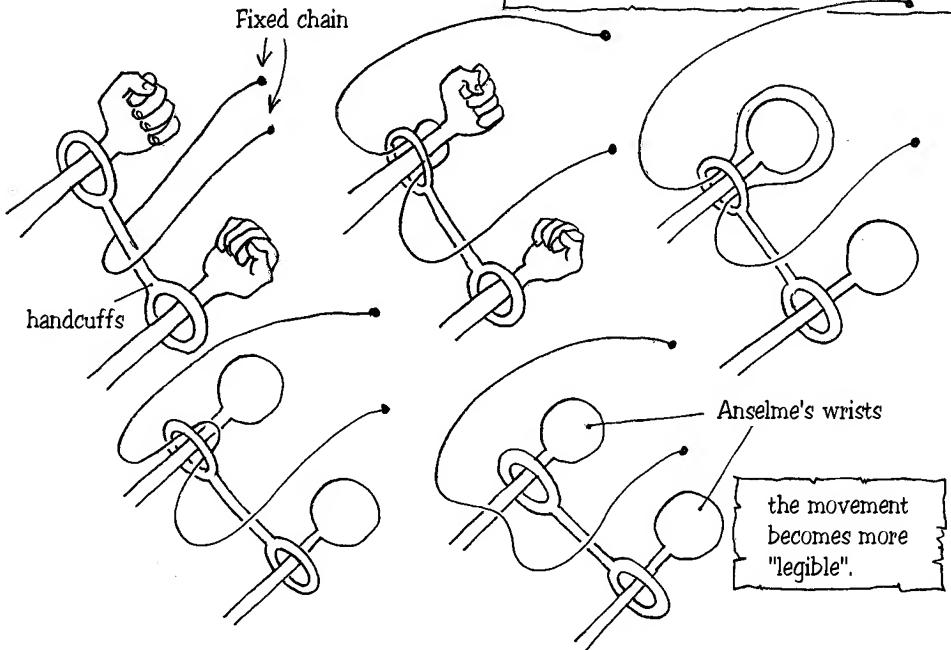
Don't get excited.  
You can release yourself... because  
you aren't really attached...

What?!?

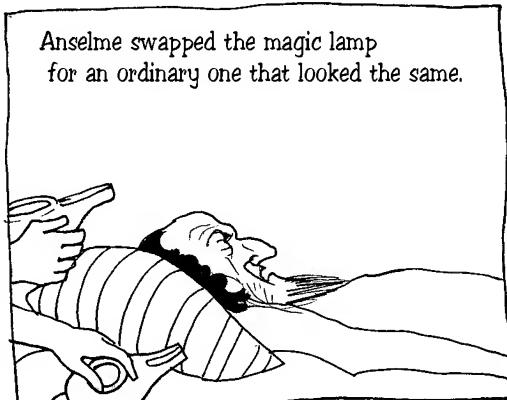
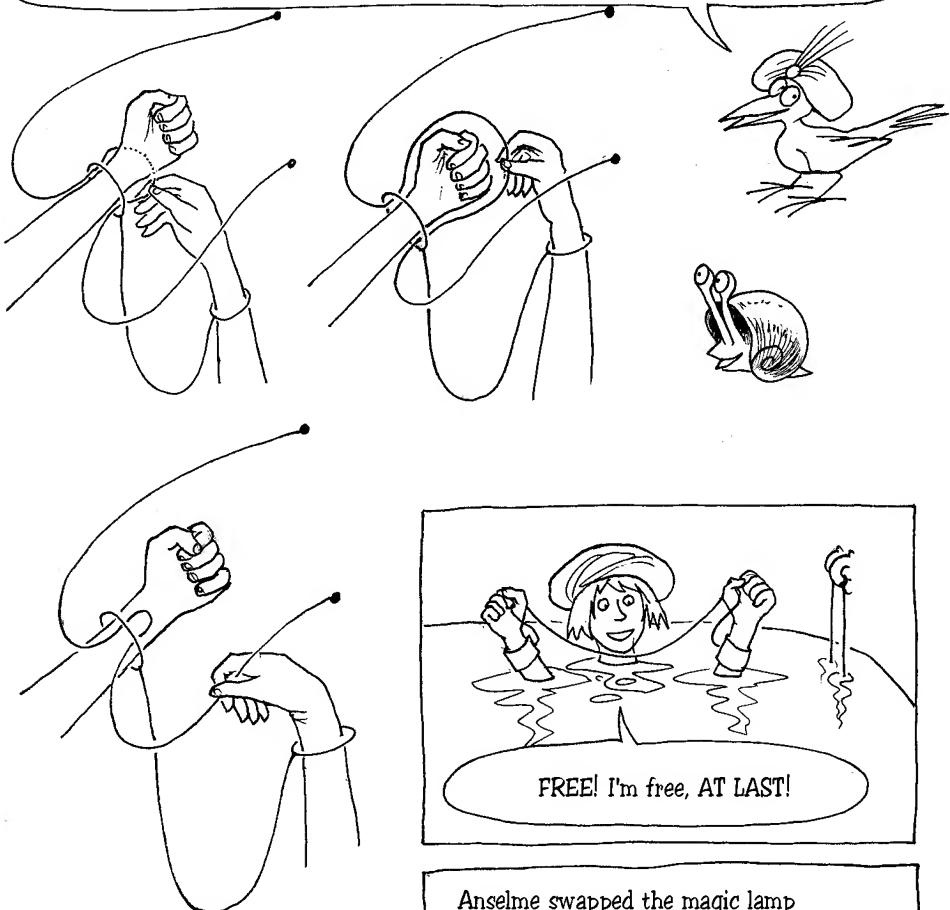
Reflect: You can't free your wrists from  
the handcuffs but, however, the chains can go  
between them and the skin of your wrists.

On reflection, Anselme ended up  
finding the solution

We've deformed the handcuffs and  
Anselme's wrists so that

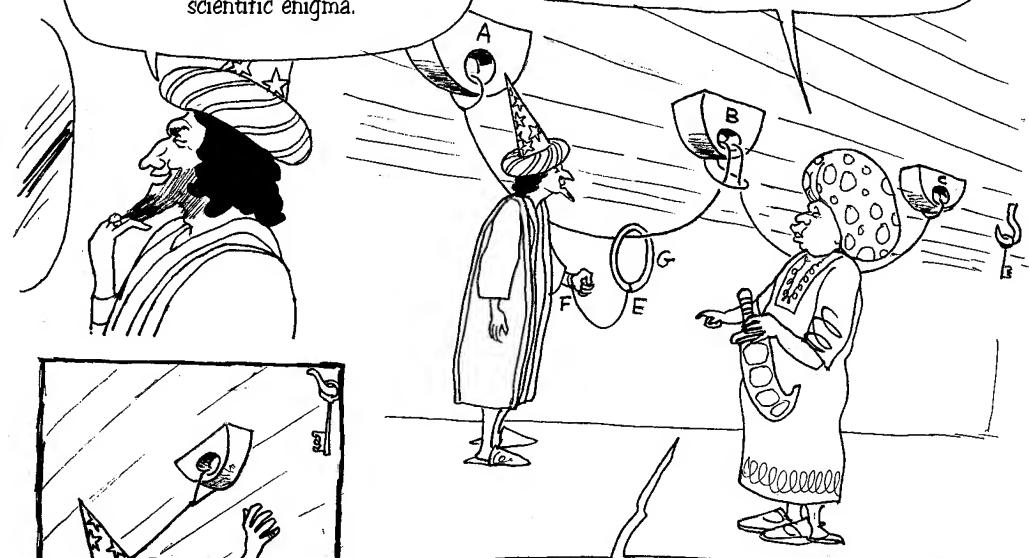


In order that the readers be able to do this trick easily themselves, using string, we have shown Anselme's handcuffs as simple rings of knotted cord.



What a fine morning.  
Let's go and see if the Sultan  
has had a dream with a new  
scientific enigma.

The Sultan dreamed that he was  
attached in this way. He dreamt that he  
found the key and freed himself.

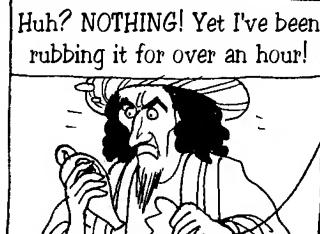


Ah, a precision: The ties A, C, F and E cannot  
be undone and the ring G, rigid, will not go  
through the hole B in any way.

Now all I need to do  
is rub the lamp.



Huh? NOTHING! Yet I've been  
rubbing it for over an hour!

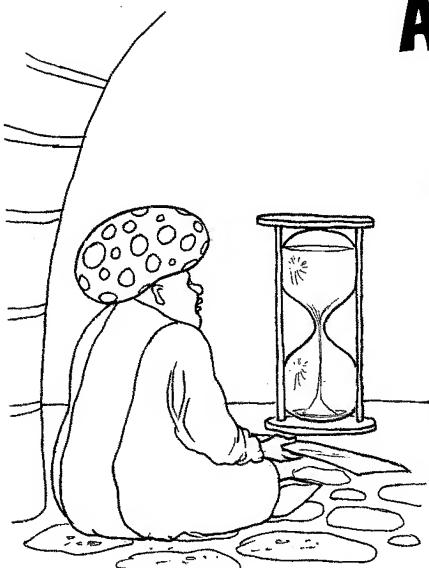


And yet this problem has a solution  
(see the next episode)



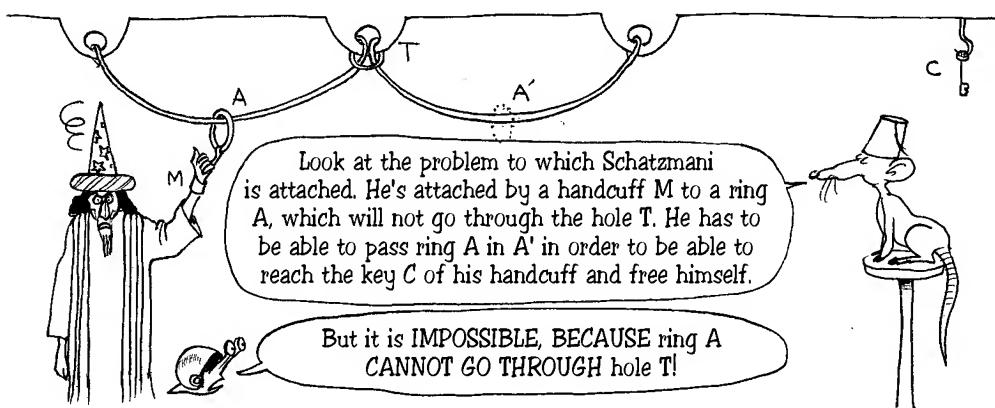
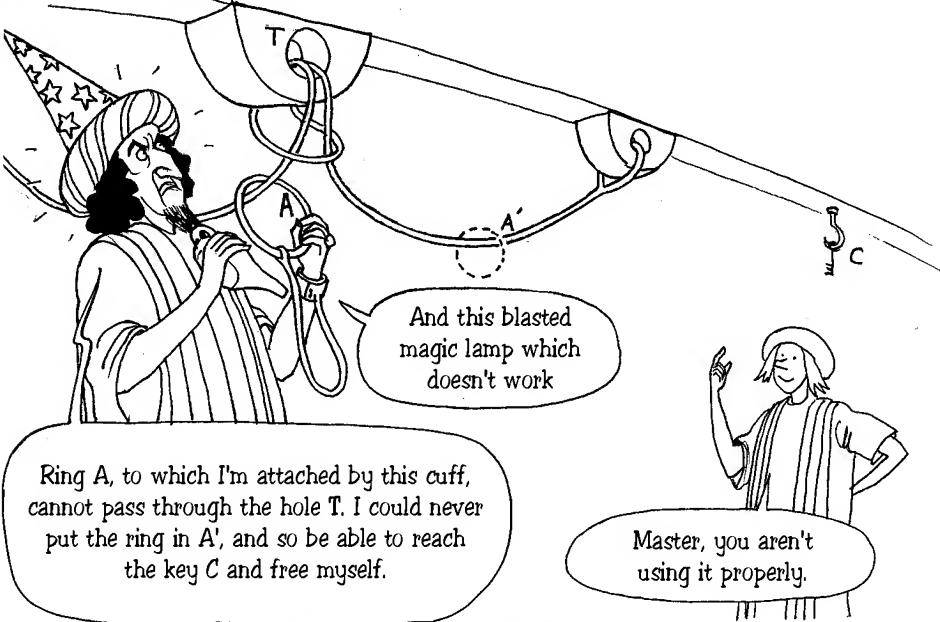
# THE SCIENTIFIC THOUSAND AND ONE NIGHTS<sup>6</sup>

21



Schatzmani has entrapped himself. As he believed he had a magic lamp, he told the Sultan that he would be able to solve any enigma. But as he didn't have the right lamp he remained attached like an idiot and, when night fell, if he hadn't managed to free himself by then, the Sultan intended to simply cut off his head.



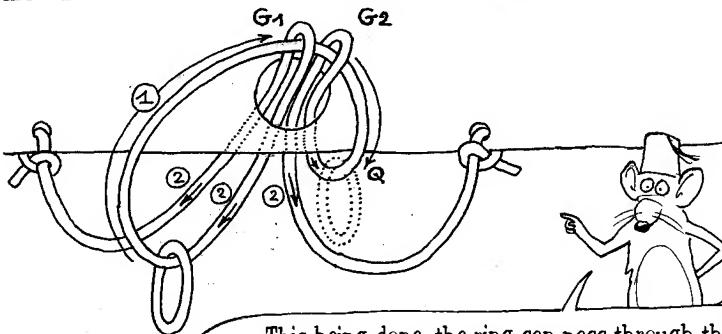
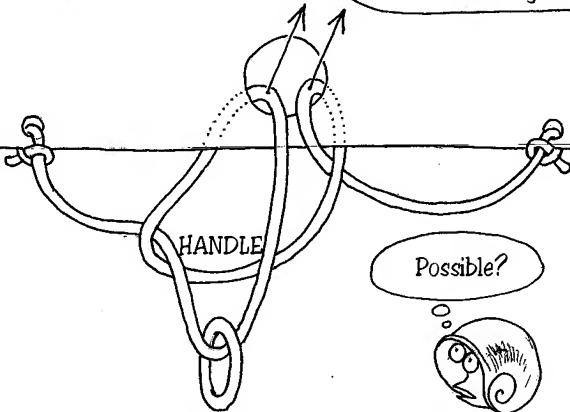


Try it with a piece of thick card, string and a large curtain ring

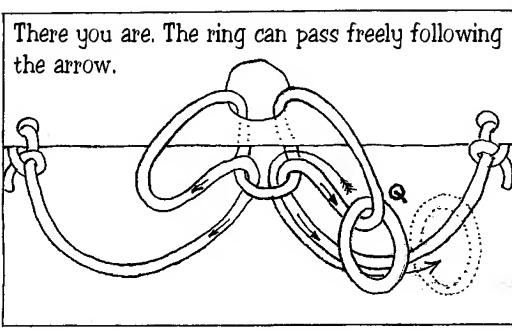
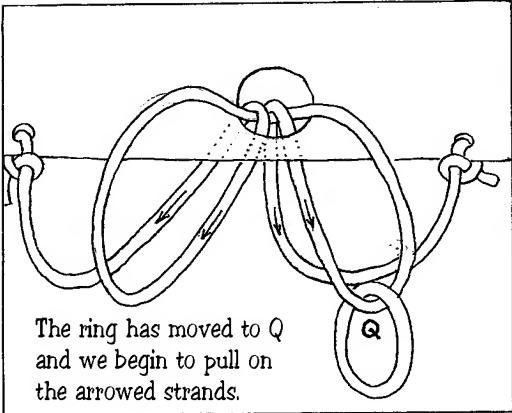


Let strand B hang down  
so as to be able to pass the ring as shown.

We will call this the "ring waiting position". Now you have to pull hard on the strands (arrowed) to be able to pass the handle A through the hole.



This being done, the ring can pass through the two braids  $G_1$  and  $G_2$  and reach the position Q. Then you just need to pull the arrowed strands to get  $G_1$  and  $G_2$  on the other side of the hole.

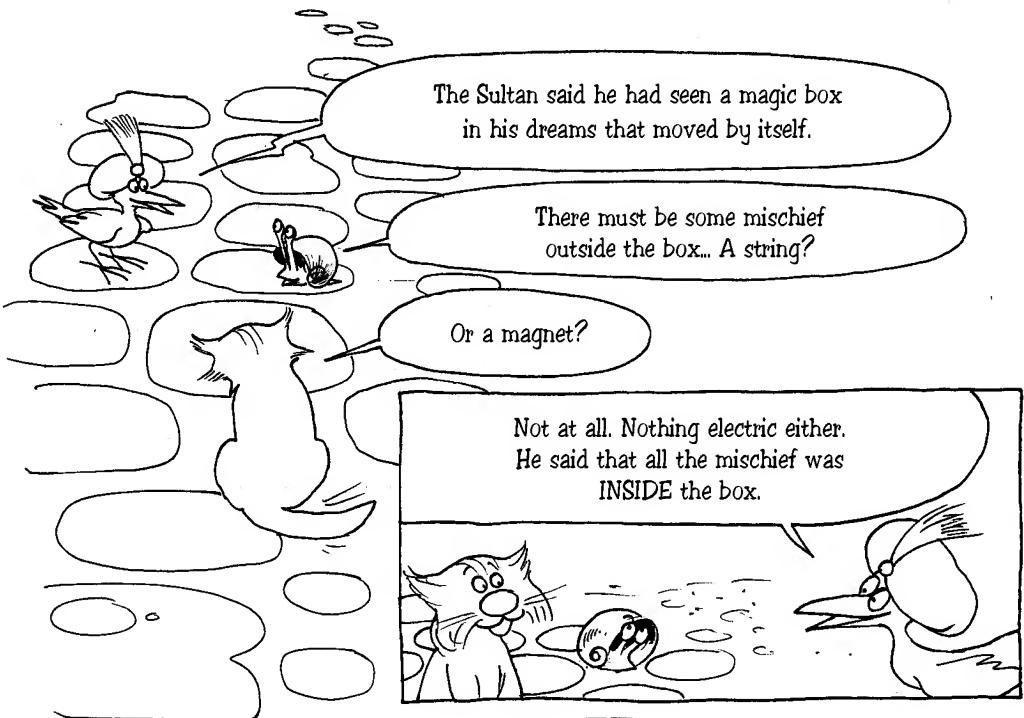


You haven't heard the best bit. Schatzmani went to see a magi to see about his hearing problems.

It seems that the Sultan had a dream in which a box moved on its own, without rope, without anything. It seems it could even climb up slopes.



# THE SCIENTiFiC THOUSAND AND ONE NIGHTS



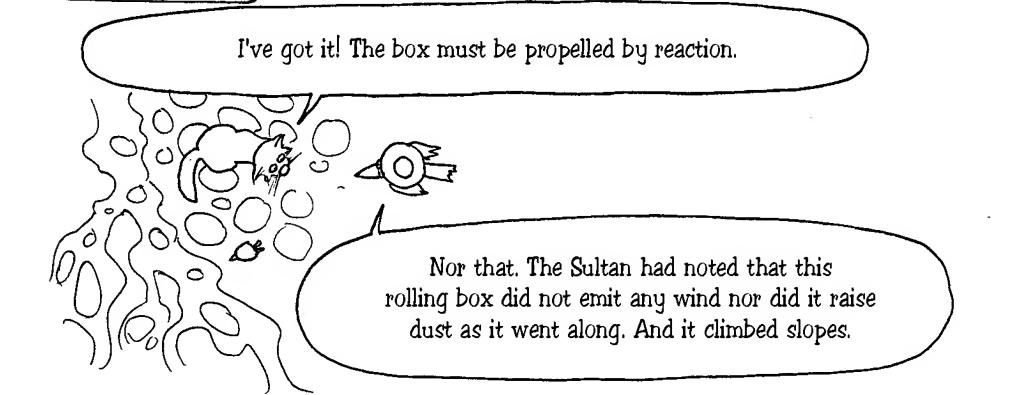
The Sultan said he had seen a magic box in his dreams that moved by itself.

There must be some mischief outside the box... A string?

Or a magnet?

Not at all. Nothing electric either. He said that all the mischief was INSIDE the box.

I've got it! The box must be propelled by reaction.



Nor that. The Sultan had noted that this rolling box did not emit any wind nor did it raise dust as it went along. And it climbed slopes.

Look at Anselme! He's spending all his time calling Sophia from the lamp, for a yes or a no. He must have a lot of scientific questions he wants to ask her.

I think that it's more likely that he's fallen in love.

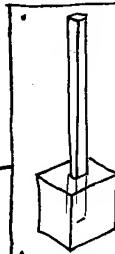
While Schatzmani, to whom Anselme had given a lamp that wasn't at all magic, couldn't understand why it refused to speak to him.

But... How can the Sultan's dream be realised?

Here's the key to the mystery, the energy source.

But that's a simple elastic!?

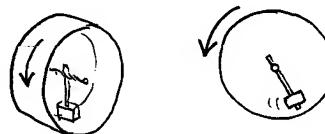
First a hole has to be made  
on each of the two sides of the box (\*)



Then fix a small, heavy object  
on the end of a match, which will  
serve as a counterweight  
(lead is ideal).



The match has to be blocked into the elastic ring, like this.  
This is then fixed in the centre of the sides of the box, so that  
it is slightly stretched (\*\*)



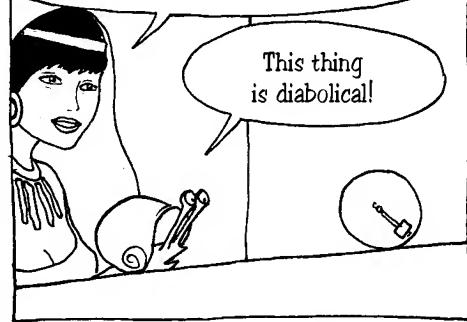
Then we turn the box in such a way  
as to "wind up" the elastic.



(\*) A metal box, for pills or honey sweets.

(\*\*) The elastic needs to be thin and supple!

It can even go up slight slopes,  
until it stops.



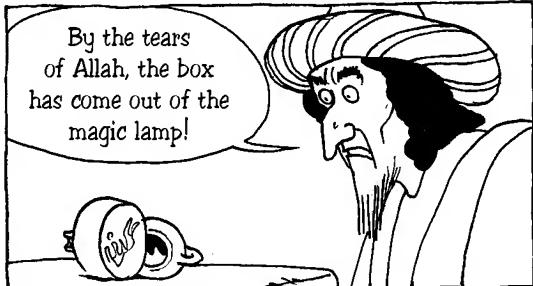
This thing  
is diabolical!

OK, let's go and explain all that to poor Schatzmani, who must be moping by the side of a desperately mute lamp.



Ah, he's asleep. He must have been thinking. That always tires him. I'll rewind the box and block it with this lamp.

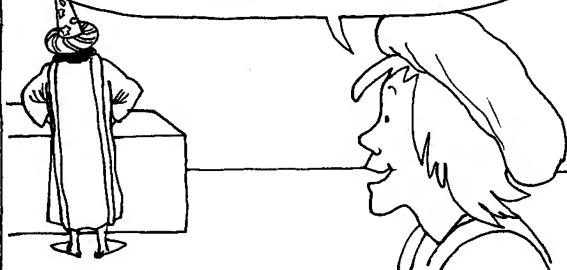
By the tears of Allah, the box has come out of the magic lamp!



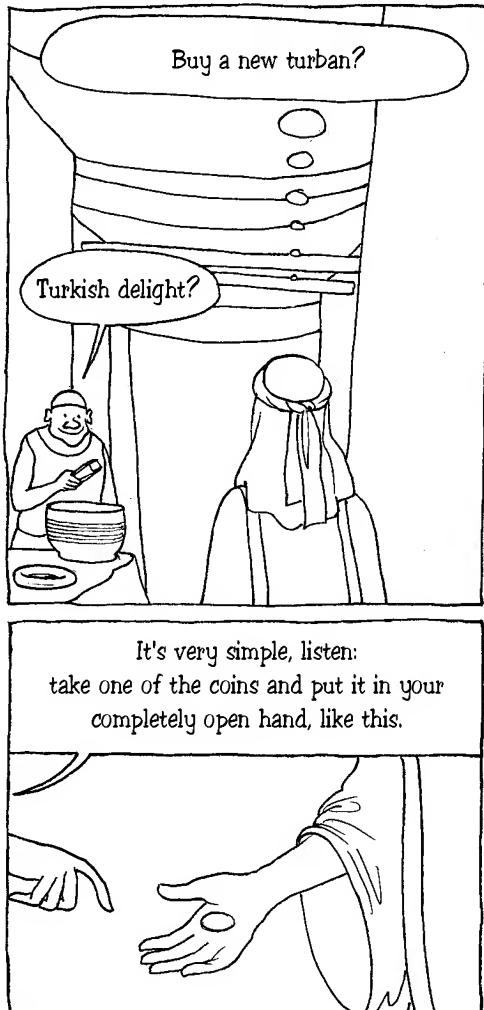
It moves by itself. CHAYTAN (\*) must be behind it!



Let's go and have a siesta. It will be quite a while before he understands how it works.



# THE SCIENTIFIC THOUSAND AND ONE NIGHTS

⑧


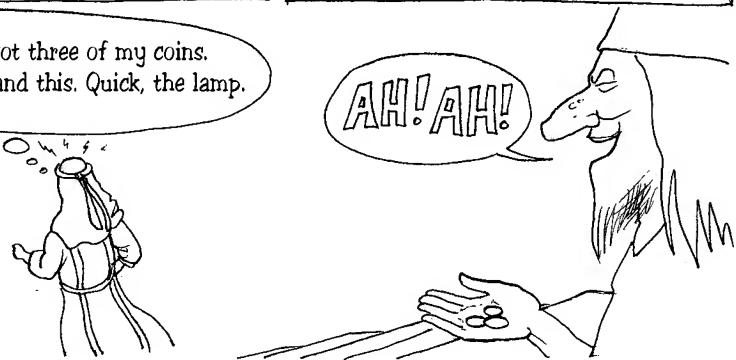
Now I put my hand just below yours, like this. You have to keep your hand completely open. If I manage to take the coin before you've closed your hand, it's mine, if not I'll give you another one.

His hand has a good distance to go to grab the coin, whereas I just need to fold my fingers.

It's a stupid game and I should win easily.

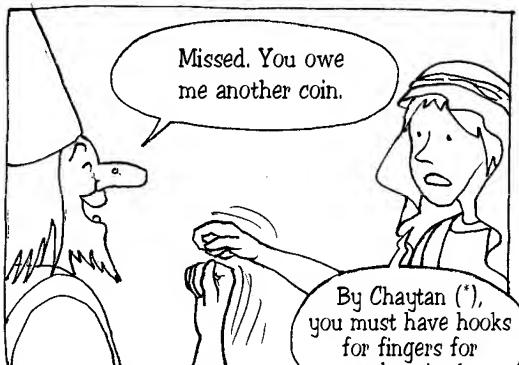


He's already got three of my coins. I need to understand this. Quick, the lamp.



In my opinion it is all because the old fellow has the initiative. Your hand moves with a slight RESPONSE TIME. You need to see when his hand starts moving, then you give the order to yours to close. That takes TIME.

It's a bit difficult to explain: between your eye, your brain and your hand, there are nerves, where a NERVOUS INFLUX travels at a finite speed.



Sophia, I don't understand anymore.  
Is he really faster than I am?

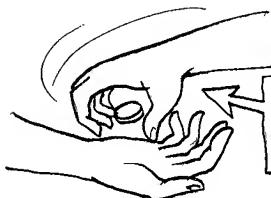


No, but he has a very fast way of taking the coin.  
I've been watching him.

He doesn't "take" the coin, he makes it jump and so gains precious time, a tenth of a second.

But... How?!

When he brings his hand down on yours, he hits it with his fingers, like this.

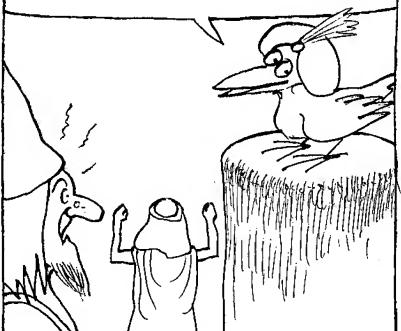


So your hand goes downwards and the coin stays in the air

His hand then closes round the coin and yours... on thin air



Anselme went back to see the old money changer, won back all his coins and many others.



# THE SCIENTIFIC THOUSAND AND ONE NIGHTS

33

9



He took my hand and made me touch the marble saying: "one equals two". And I could feel that there were two marbles.

There were two?

But no, there was just one. I checked. Explain this mystery to me.

But...

This dream is sending me mad. Solve this paradox. If not you know what I will do.

Why can't he have the same dreams as everyone else?

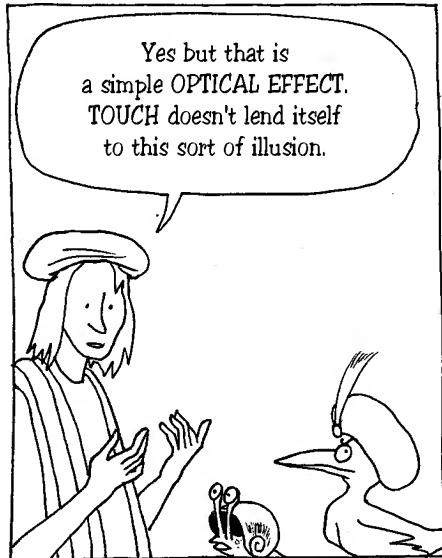
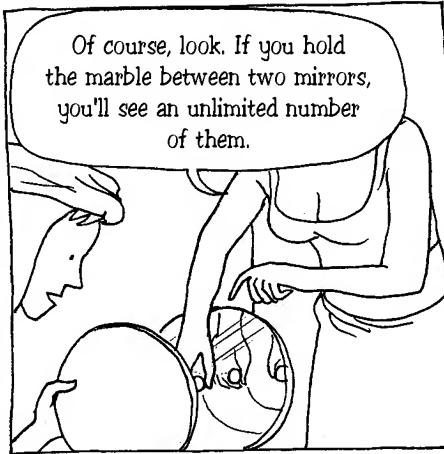
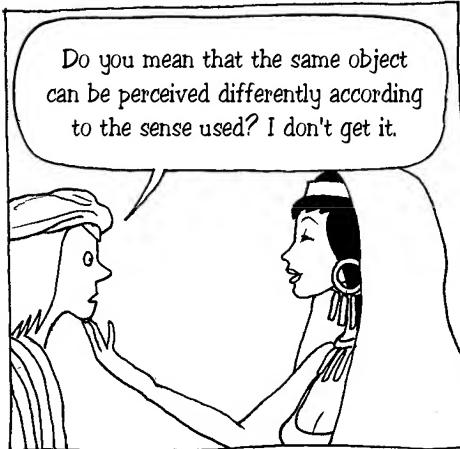
Yes Lord,  
I know...

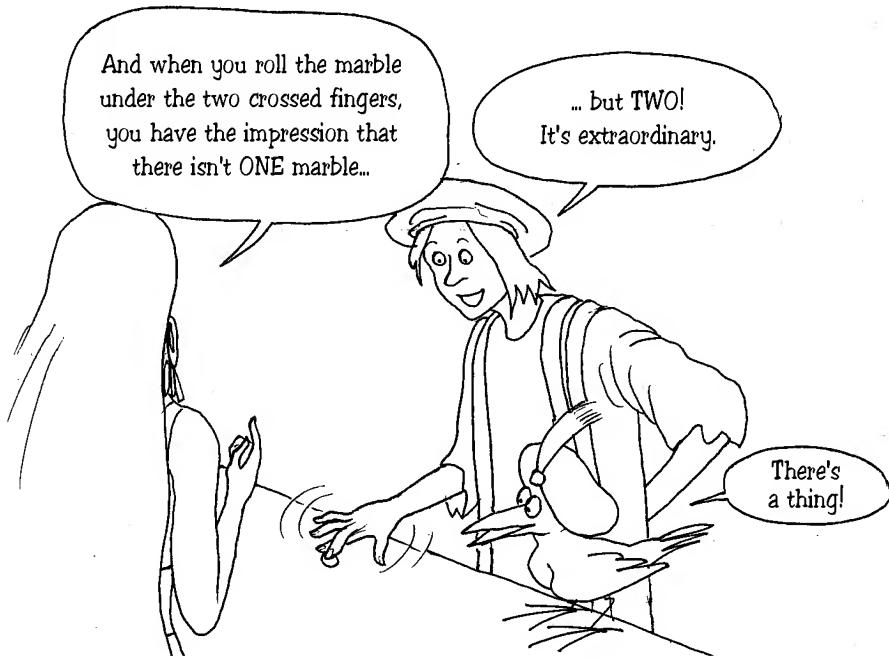
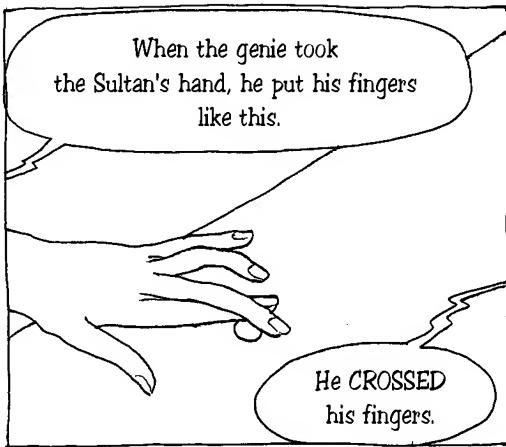
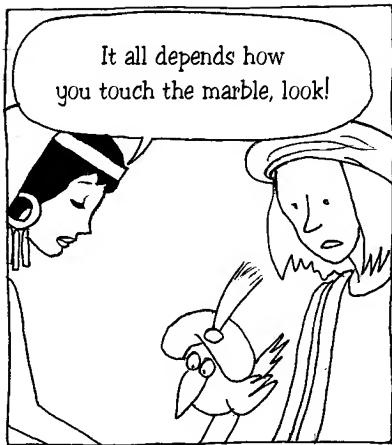
Go and find Anselme, quickly!

A marble that is one and two at the same time?!?

Let's see. When the Sultan SEES the marble, he is using his eyes and sees just one. But when he touches it, he FEELS two. They have two different meanings.

Maybe there's an esoteric symbolism that escapes us.

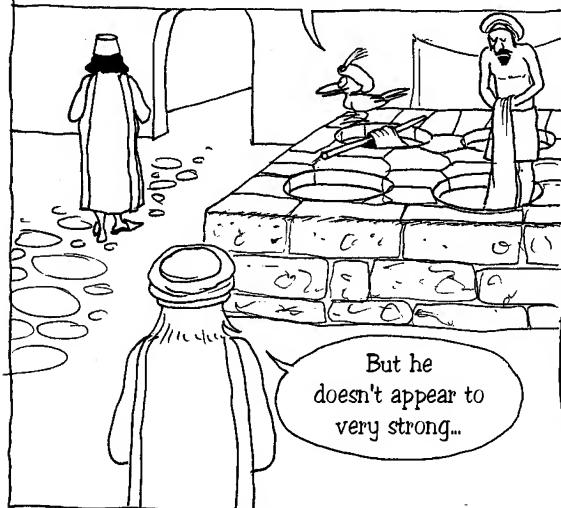




# THE SCIENTIFIC THOUSAND AND ONE NIGHTS



He's just won a whole purse of gold given by the Sultan's very hand. In effect, he was able to do something that no man in the kingdom has been able to do since, even the strongest and most skilful.



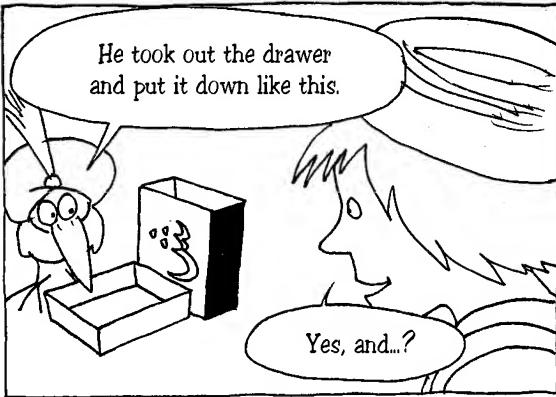
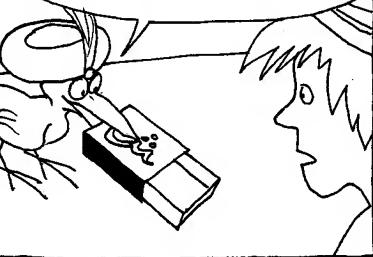
Schatzmani, when consulted, said that he must have concluded a pact with Chaytan (\*) himself to be able to operate such a prodigy.

He said that he has "the Devil's hand"

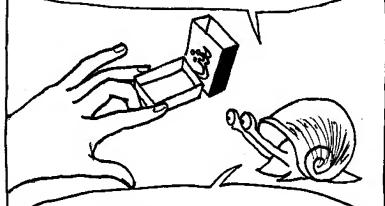


Well, he took this little box,  
the one the Sultan puts  
his spices in (\*)

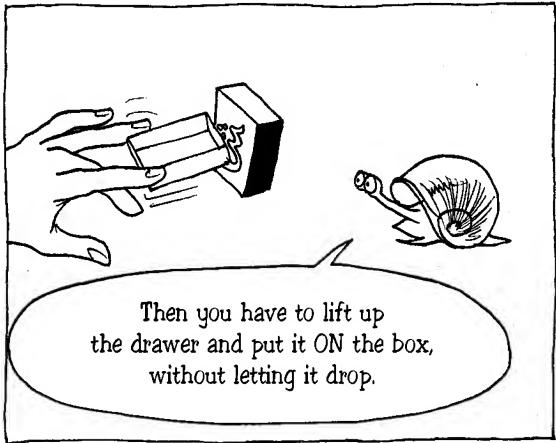
He took out the drawer  
and put it down like this.



Take the drawer between your  
index finger and your ring finger.



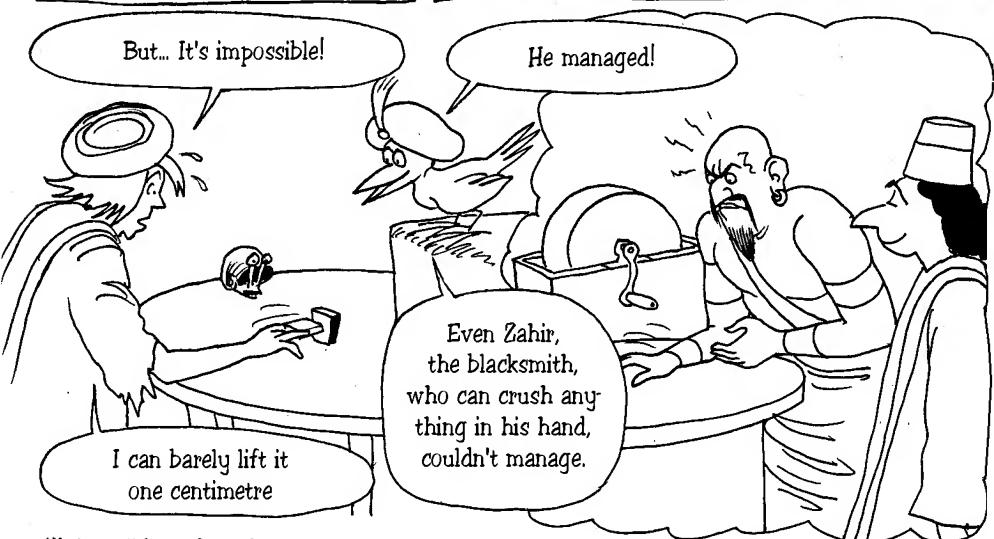
The middle finger must  
IMPERATIVELY remain  
in contact with the table.



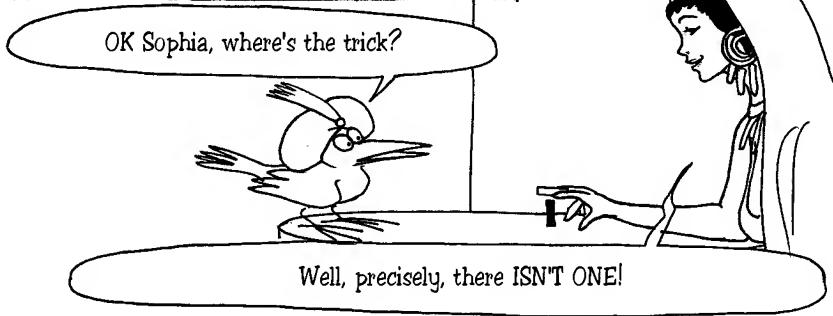
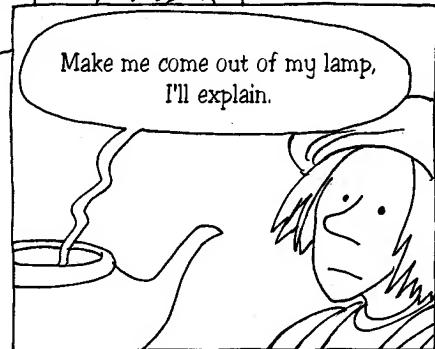
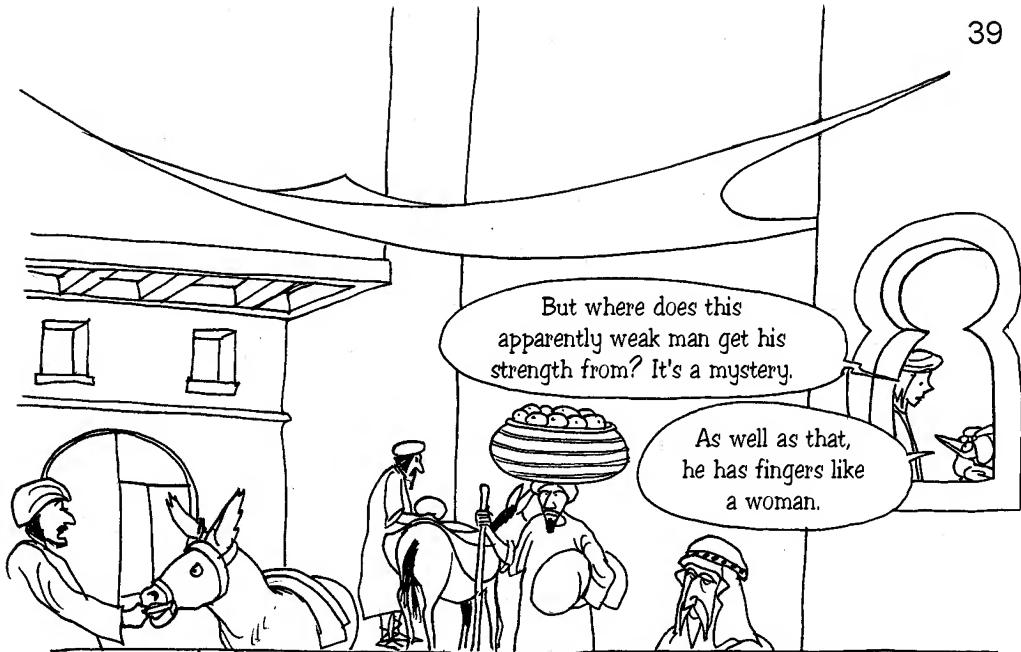
Then you have to lift up  
the drawer and put it ON the box,  
without letting it drop.

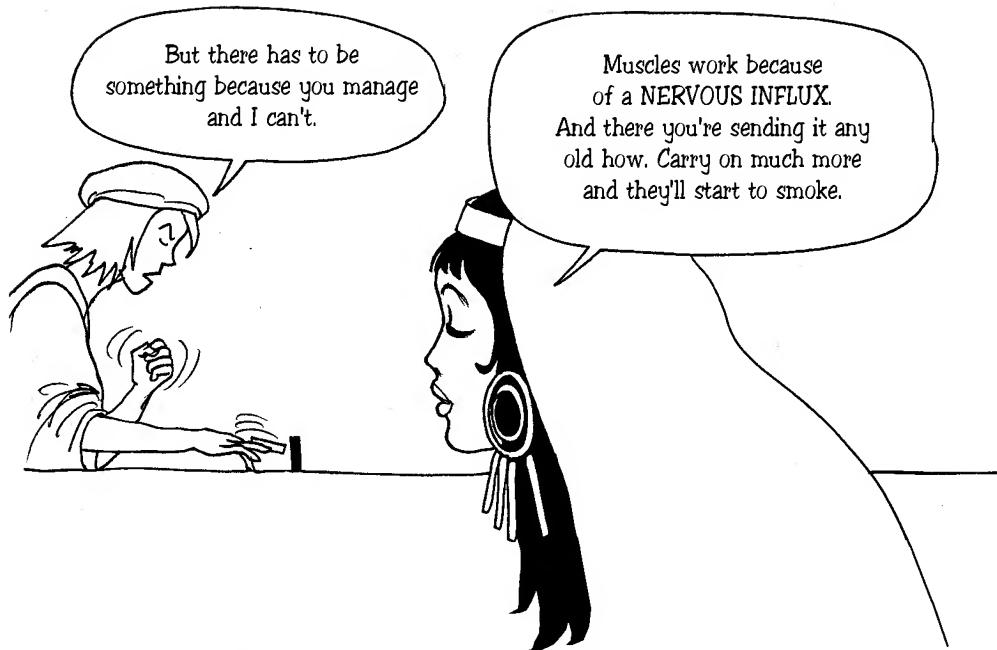
But... It's impossible!

He managed!

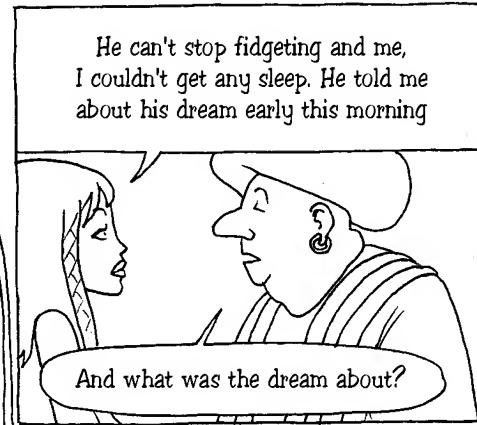


(\*) A small box of matches.

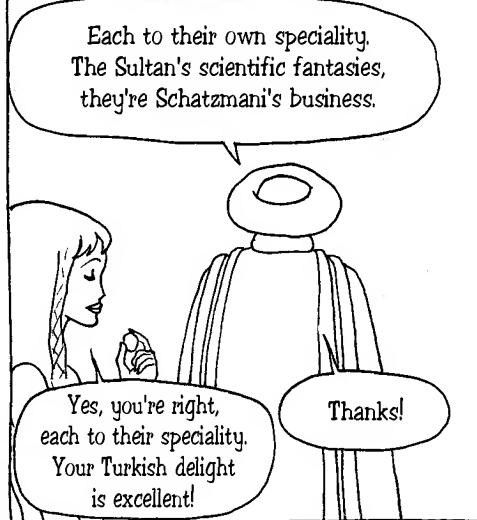


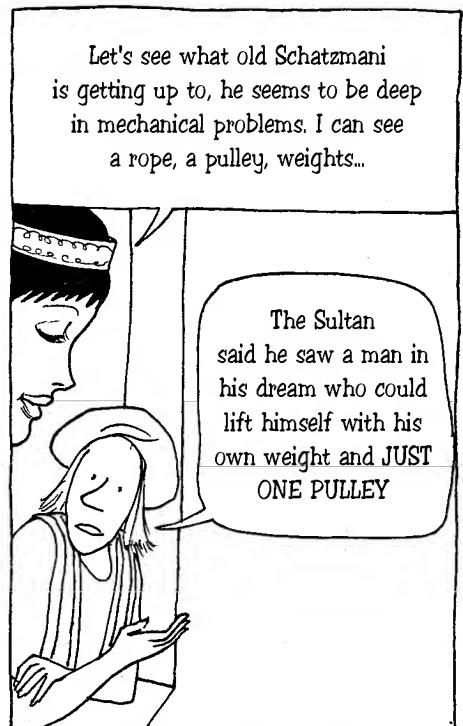
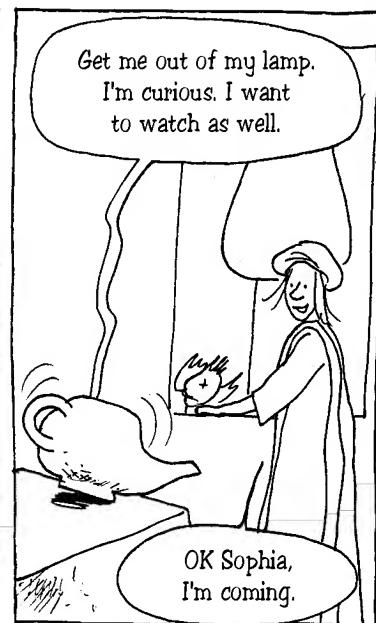
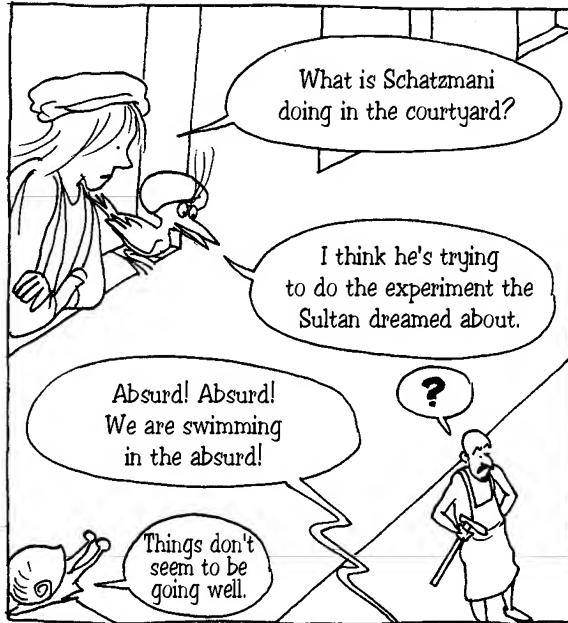


# THE SCIENTIFIC THOUSAND AND ONE NIGHTS



I didn't understand anything.  
He said that "a man can lift himself up with  
his own weight". But I'm just one of the  
women of his harem, what do I know?





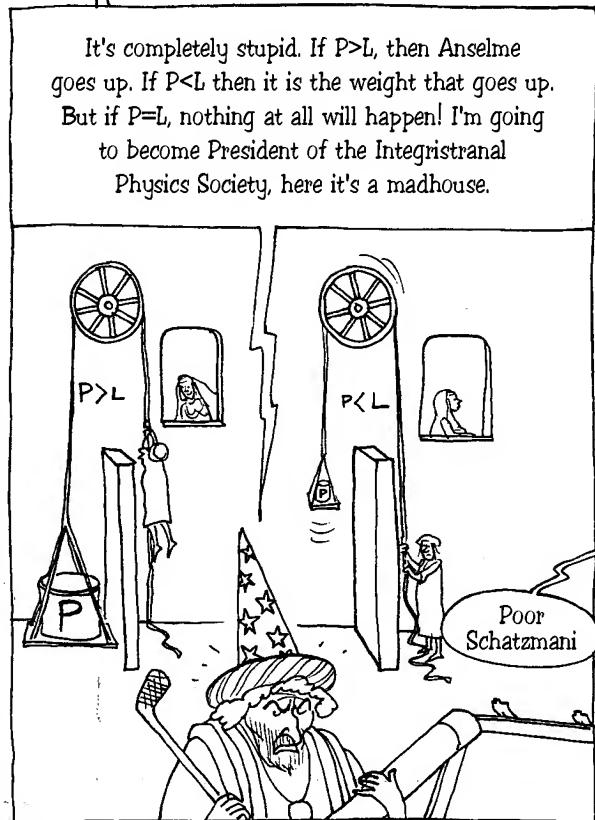
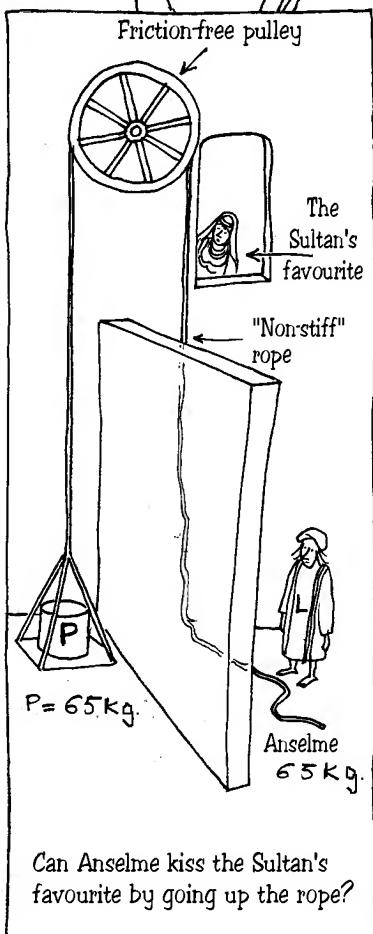
O venerated Sultan, excuse me but there,  
I've cracked up. This experiment is impossible.

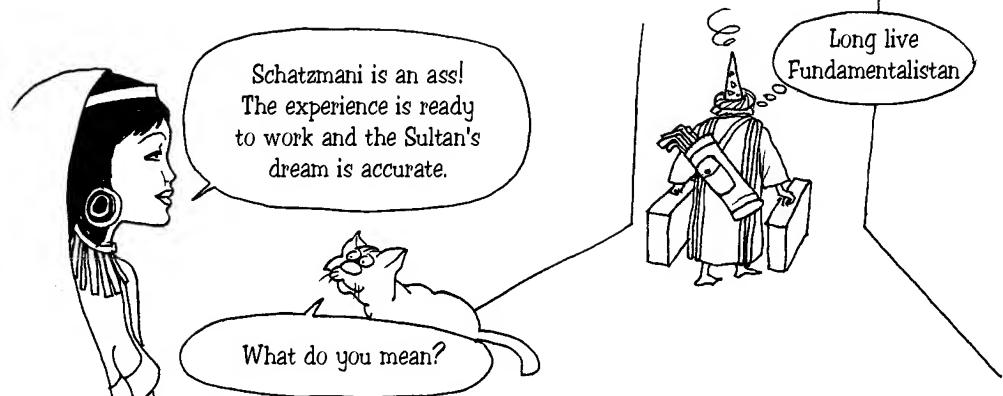
But because  
I tell you I saw it  
in a dream.

Light of the Orient, sovereign of Absurdistan,  
it isn't a member of the Science Academy that  
you need, it's a psychoanalyst. I prefer to resign.  
I've got a job as the Grand Inquisitor in the  
Science Academy of Fundamentalistan.

My hair has turned white and started  
to go frizzy because of all these problems.  
I'm fed up with these circumvolutions.

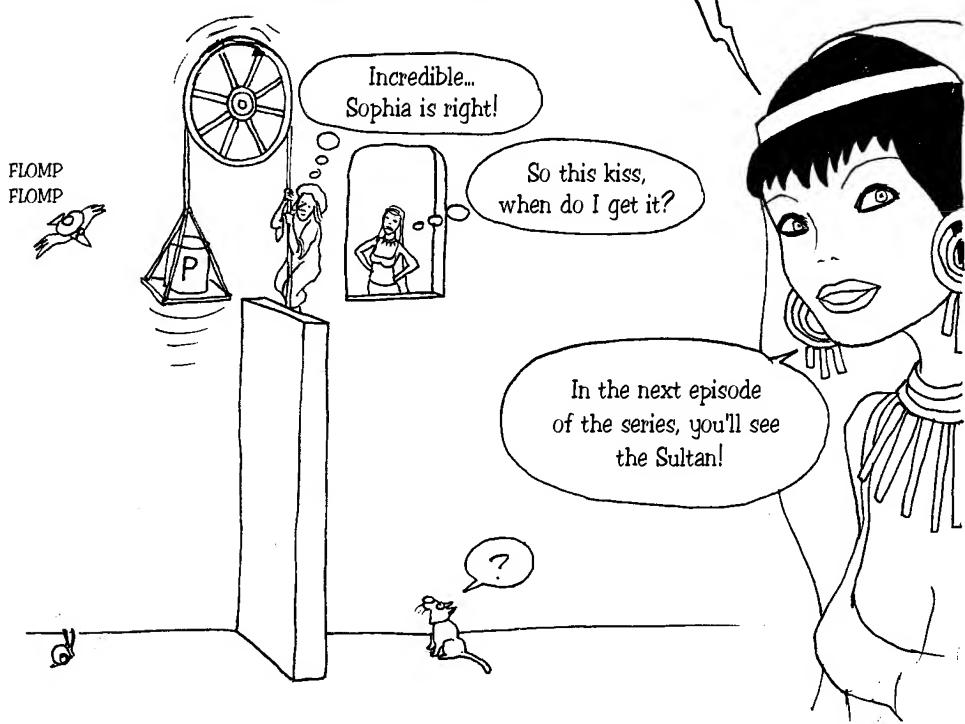
It's completely stupid. If  $P > L$ , then Anselme  
goes up. If  $P < L$  then it is the weight that goes up.  
But if  $P = L$ , nothing at all will happen! I'm going  
to become President of the Integristranal  
Physics Society, here it's a madhouse.





Anselme weighs 65kg. The counterweight too. When he exercises any sort of traction on the rope, and as the pulley produces no friction, the force is transmitted to the weight and... to himself, by virtue of the Action-Reaction principle. If the force is inferior or equal to 65kg, NOTHING will happen. Neither the counterweight nor Anselme will be lifted up.

But, as soon as the force that Anselme exercises is superior, both will rise because they are submitted to an IDENTICAL force and they have the same MASS.



# THE SCIENTIFIC THOUSAND AND ONE NIGHTS

12

Night was falling on ABSURDISTAN.

Schatzmani has left us. He's in his way to FUNDAMENTALISTAN. I no longer have a boss. Now I'm unemployed.

What do you want, for this type of person science functions like a religion. Without certainties, he's lost.

But science, Anselme, is like a mirage in the desert.

A mirage?

Look at the stars in the sky. For centuries men believed that the more brilliant they were, the closer they were, whereas in fact, the brightest stars are young stars, very emissive and sometimes very distant.



So people like Schatzmani said that Earth COULD NOT move because, if that had been the case, the closest stars should move in relation to more distant stars, through a parallax effect.

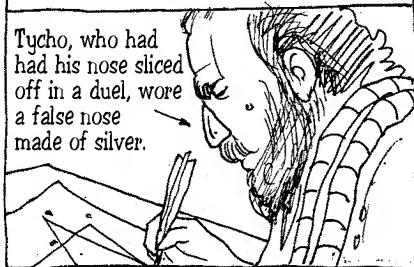


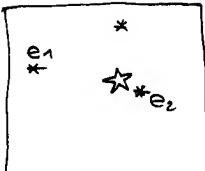
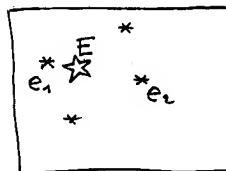
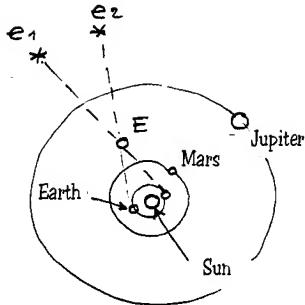
They also believed that the stars were at the same distance as the planets, that is to say at "millions of leagues". They gave themselves a false idea of the Cosmos,



which they hung on to for a very long time.

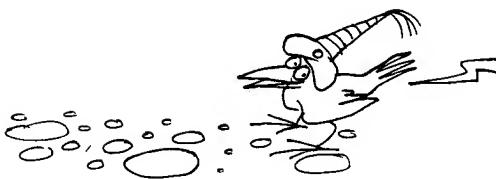
A Danish astronomer, Tycho Brahe, even showed "by calculation" that this idea of movement of Earth "does not resist analysis, because the vault of heaven is... immutable"!





Summer

Winter



The reasoning founded on the parallax phenomenon:

That E a "near star" and  $e_1$ ,  $e_2$ , two distant stars. If Earth revolved around the Sun, the star E should project differently on to the "sky background" (stars  $e_1$  and  $e_2$ ) according to the seasons.

And that is exactly what happens in reality. But poor Tycho underestimated the distance of stars. If the solar system was the size of a dinar, the closest star would be at the edge of town. We had to wait until the nineteenth century and the invention of photography before Bessel was able to prove the phenomenon.



Oh, I can hear the Sultan coming. Quick, I'm going back into my lamp!



It is I, O splendid one.

